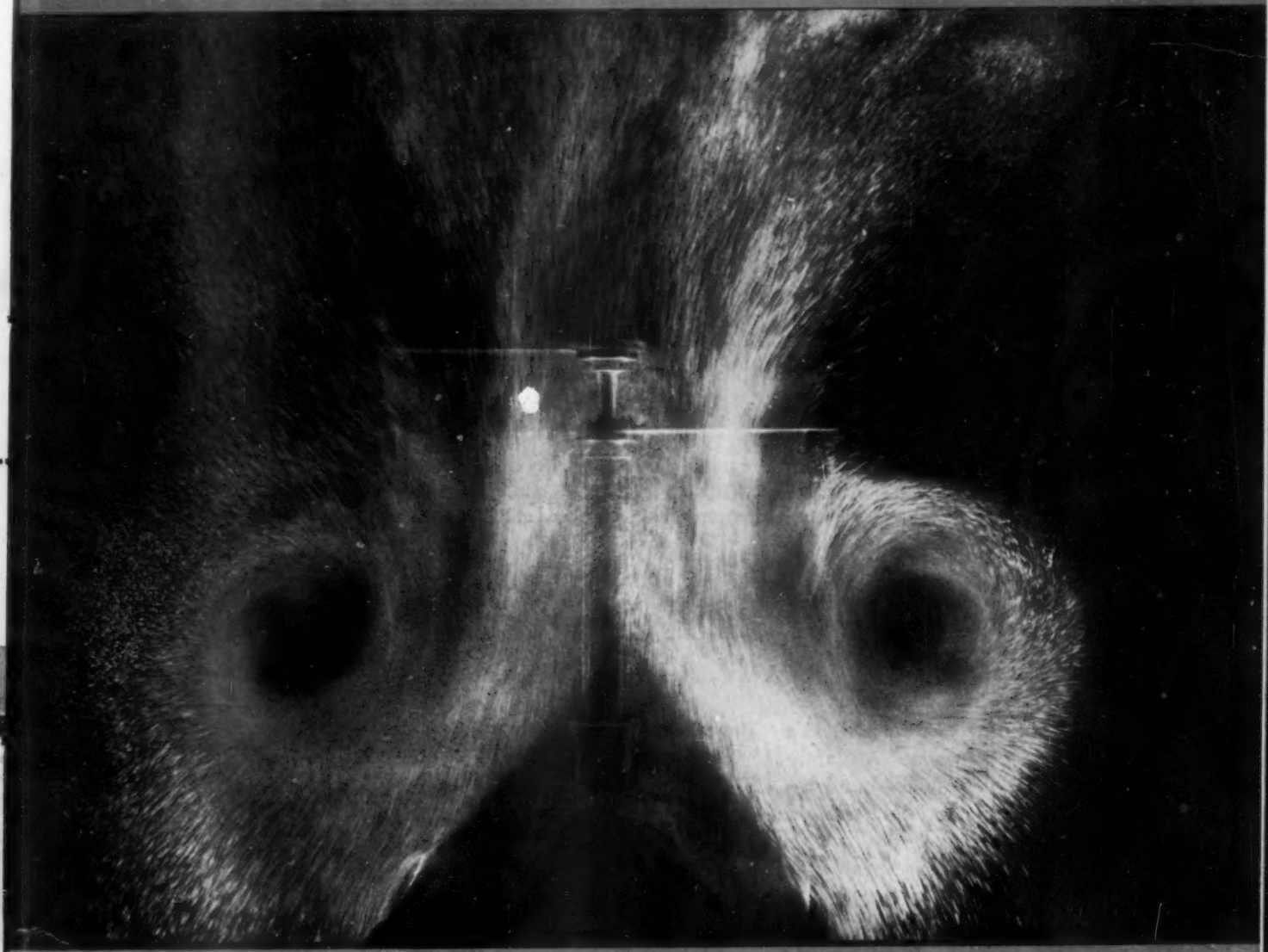
15¢

December 16, 1950

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Air Flow

See Page 397

A SCIENCE SERVICE PUBLICATION

$5.50 A YEAR

VOL. 58 NO. 25 PAGES 385-400

New television microphone, developed at RCA Laboratories, virtually vanishes when in active use.

Vanishing Microphone lets the stars shine

Now you see it, now you don't! RCA's new "vanishing microphone" is plainly visible when standing alone—but let a television performer stand before it and it seems to disappear.

Called the "Starmaker," this RCA microphone is little larger than a big fountain pen . . . and principles of design based on modern camouflage blend it with an artist's clothing. There's no clumsy "mike" to distract your attention from the artist—and it's also a superbly sensitive instrument.

Through research carried out at RCA Laboratories, the "Starmaker" microphone picks up sound from all directions—hears and transmits every sound the human ear can detect. It's not only small and almost invisible, but it's also one of the most efficient microphones ever devised.

* * *

See the latest wonders of radio, television, and electronics at RCA Exhibition Hall, 36 West 49th Street, New York. Admission is free. Radio Corporation of America, RCA Building, Radio City, New York 20, New York.

Known for brilliant pictures, RCA Victor's 1951 home television receivers also have the finest of sound systems—RCA Victor's "Golden Throat."

RCA

RADIO CORPORATION of AMERICA

World Leader in Radio — First in Television

MEDICINE

Vaccine Against Leprosy

Hope is raised that the BCG vaccine for tuberculosis may also give protection against leprosy. Individual immunity "must exist."

➤ HOPE that the BCG vaccine for tuberculosis may give some protection against leprosy was raised in a report to the American Academy of Dermatology and Syphilology in Chicago.

The report was given by Dr. Harry L. Arnold, Jr., consulting dermatologist (skin specialist) of the Honolulu Receiving Station for Leprosy and for the Kalaupapa Leprosarium, Island of Molokai, Hawaii.

The hope of vaccination against leprosy comes from a new test devised by Dr. Max Levine, chief of the Hawaii Territorial Department of Health's bureau of laboratories.

In the test, red blood cells of sheep are first treated with tuberculin extracted from tuberculosis germs. Then blood serum of the patient is added to determine at what concentration the serum will cause the tuberculin-treated sheep cells to bunch, or agglutinate.

This test, Dr. Levine has found, shows a much stronger positive reaction in positive cases of leprosy than in positive cases of tuberculosis.

The significance of Dr. Levine's findings "is not yet certain by any means," Dr. Arnold stated, "but suggests the possibility that the biologic defensive reactions against leprosy and tuberculosis may be more closely related than we have supposed.

"It lends considerable color, too, to the recent suggestions that BCG vaccination against tuberculosis may have some protective value against leprosy."

Individual immunity to leprosy "must exist," Dr. Harold M. Johnson, associated with Dr. Arnold, declared at the meeting.

"For example," he said, "four of 11 children develop leprosy with neither parent beings lepers, or a couple infected with leprosy have nine children, of whom only two are lepers."

Most patients with leprosy admitted to Kalaupapa Leprosarium have had a history of leprosy in the parents, but recently as high as 60% of patients admitted have not had a history of intimate relationship or family tie up with leprosy, Dr. Johnson reported. Infection in these cases could have occurred in early childhood, he pointed out.

The number of leprosy patients in Hawaii has gradually decreased from about 1,200 in 1890 to about 300 under treatment at present with several hundred on temporary release.

Most of the estimated three million lepers in the world are in China, India and Africa. The United States is believed to have between 500 and 5,000 unclassified and undiagnosed leprosy patients.

Science News Letter, December 16, 1950

NUTRITION

New Vitamins Predicted

One, which seems to give mice resistance to mouse typhoid fever, already traced to germ of wheat. Best plan at present is to eat well-balanced diet of natural foods.

➤ DISCOVERY of new vitamins, each giving resistance to special groups of infectious diseases, was predicted by Dr. Howard A. Schneider of the Rockefeller Institute for Medical Research.

Dr. Schneider and associates are already on the trail of one such vitamin which seems to give mice resistance to mouse typhoid fever. The substance has so far been traced to the germ of wheat. Its existence was discovered from studies in which about 55% more mice survived mouse typhoid when on a diet of whole wheat and milk than did mice on a synthetic diet of purified foodstuffs and vitamins.

The mice in these studies were of mixed inheritance, as man is. Consequently, there is a possibility that man is getting resistance to infection from factors in his diet. But if such resistance factors exist, they are at such low concentrations that they will have to be isolated from foods and made available in concentrated form before any claim can be made that a real resistance vitamin has been found.

For the present, the "prudent course of the home diet planner," Dr. Schneider advised, "will be to continue to arrange for a well-balanced diet of natural foods with well recognized nutritional goals in view, and until we know much more it would be a waste of money to step up consumption of any nutrient, vitamin or otherwise, in the belief that an increased resistance to infection would result."

"Indeed, if any nutrient can ever be shown to influence our ability to cope with infectious diseases, it will first have to be separated out of natural foods and will in all probability be a new, and previously unknown, addition to the list of food essentials.

"Against this day we had best maintain an attitude of skeptical waiting."

Dr. Schneider's prediction of the discovery of new resistance vitamins was made in a statement prepared for hearings before the House Select Committee to Investigate the Use of Chemicals in Food Products, of which Rep. James J. Delaney of New York is chairman.

Science News Letter, December 16, 1950

AERONAUTICS

Automatic Controls Work on Helicopters

➤ AUTOMATIC controls for helicopters, to relieve the pilot of the constant two-hands, two-foot job he now has to do, have been tested by the Piasecki Helicopter Corp. and found successful both in normal flying and in hovering.

Vertical landings and take-offs with the auto-pilot have been made, as well as complete duplication of fixed wing auto-pilot controlled flights. This means that the helicopter is now capable of "blind flying" in the worst weather conditions and can make automatic landing approaches through low weather ceilings. The device used is a Sperry production type automatic pilot already proved in both commercial and military uses.

Science News Letter, December 16, 1950

NO HANDS—Pilot and co-pilot of this helicopter are both extending their hands to show you that the controls are being managed completely automatically.

MEDICINE

Profile System Urged

If Army classified men according to their qualifications for specific Army jobs, instead of overall standards, many rejects could be used.

➤ THE ARMED FORCES could draw on many of the 30% to 35% of men called up for draft who are now being rejected without decreasing efficiency if they instituted the profile system of classifying all potential draftees. By use of this system they could place men with minor physical and mental defects in jobs they could handle adequately.

This is the opinion of members of the committee on physical standards in the Armed Forces of the National Research Council, all of whom are doctors.

Two years ago a similar committee, set up to advise the Armed Forces, recommended to them the appointment of a high level body to study the profile system. This was not done. Therefore, the committee, which met a month ago, will shortly send another recommendation to the Armed Forces, this time much stronger.

The profile classification system entails finding out the minimum physical and mental qualifications necessary to perform each of the thousands of different jobs to be found in the Armed Forces. To take an extreme example, a man with an artificial leg might have the qualifications necessary to perform the duties of a typist—although he couldn't qualify as an infantryman.

While the committee, headed by Dr. John Stewart of the University of Buffalo, does not expect the Armed Forces to take one-legged men, it believes that many uses could be found for men now being rejected for minor physical handicaps if their capabilities were compared with job qualifications under the profile system.

Right now, if a man has one minor physical handicap which disqualifies him for the draft, no record of his potential capabilities is kept. He is rejected and, so far as the Armed Forces are concerned, he is marked unfit to do any of the jobs in the Army, Navy or Air Force.

Selective Service Director Lewis B. Hershey has complained about the high rate of rejections in the present draft. He finds it difficult to fill the needs of the Army from the limited pool of otherwise qualified men in the 19 to 26 age bracket. Former Secretary of War Robert Patterson has spoken of the "fantastic physical standards" set up by the Armed Forces.

However, the Army, at least, is interested in the profile system. Right now experts are going over all the thousands of job classifications, fitting them with the minimum physical and mental standards necessary to fill the jobs. The Army experimented with a profile system toward the end of World War II and is classifying samples of potential draftees by the profile system right now.

The Navy and the Air Force, on the other hand, have systems of their own.

Although Army officials say that a profile system would be instituted the day total mobilization became necessary, some of them are reluctant to use it during partial mobilization. They believe it is necessary to keep standards high because the men entering service now will have to be the leaders and the teachers of men to come in under total mobilization. Therefore, they say, minimum physical and mental standards necessary to do the job are not enough.

Science News Letter, December 16, 1950

Question Box

ARCHAEOLOGY

Where are America's oldest houses? p. 396.

BOTANY

How can flowers be kept fresh for Christmas? p. 390.

ENTOMOLOGY

What is the cruising radius of the housefly? p. 392.

MEDICINE

On what do scientists base their hope for a vaccine against leprosy? p. 387.

What cure has been found for the bite of the black widow spider? p. 389.

NUTRITION

In what food will one of the predicted vitamins be found? p. 387.

PHARMACY

How many antibiotics do we have? p. 391.

PLANT PATHOLOGY

What methods are used to prevent the spread of Oak Wilt? p. 390.

Photographs: Cover, NACA; p. 387, Piasecki Helicopter Corp.; p. 389, Westinghouse; p. 391, U. S. D. A.

● RADIO

Saturday, December 23, 1950, 3:15-3:30 p.m., EST

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Howard Meyerhoff, Executive Secretary, American Association for the Advancement of Science, will discuss "A Preview of Christmas and Big Science Meetings of the Week."

SCIENCE NEWS LETTER
VOL. 58 DECEMBER 16, 1950 No. 25

43,500 copies of this issued printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W. Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 2-4822.

MEDICINE

Test for ACTH Dosage

Extremely accurate and effective, new tolerance test shows how much ACTH a patient can be given without bad or unpleasant effects.

➤ THE "first positive and foolproof test" showing how much ACTH a patient can be given without bad or unpleasant effects was announced at the ACTH conference sponsored in Chicago by Armour Laboratories, principal producer of the hormone.

ACTH is one of two hormone chemicals developed within the last year and a half which bring dramatic relief in arthritis and other conditions. Cortisone is the other of these so-called miracle drugs.

The ACTH tolerance test was devised by Dr. Robert S. Speirs and L. Wragg of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me. Trial of the test on arthritis patients at the Jewish Memorial Hospital, Roxbury, Mass., was made by Drs. Freddy Homburger and C. Bonner of Tufts College Medical School, Boston.

The test depends on a relation between certain blood cells, called eosinophils, and the adrenal glands. ACTH is a stimulator of the adrenal gland. The test is made on mice that have had their adrenals removed. Samples of urine from patients getting ACTH are injected. The number of eosinophils in the mouse's blood tells whether the patient's own adrenals have responded well to ACTH and whether he has gotten enough of the hormone.

The test is also believed to have useful possibilities for diagnosing various diseases, particularly those involving poor function of the adrenal glands.

Although the test is extremely accurate and effective, it must be done with completely standardized mice and very careful training. As soon as funds permit, Jackson Laboratory plans to establish a center at Bar Harbor for training teams of scientific workers to make the test with Jackson Laboratory mice.

Good for Spider Bites

ACTH, one of the two modern hormone remedies for arthritis, may be good medicine for snake and spider bites.

Two cases suggesting this were reported to the conference by Dr. Harley E. Cluxton, Jr., director of medical research for Armour Laboratories.

Both cases occurred in Savannah, Ga., where Dr. Cluxton formerly was in practice. One was that of a 32-year-old expectant mother who was bitten on the hand by a black widow spider.

Shortly afterward, she was seized with the characteristic signs of a severe reaction from black widow spider venom, including severe abdominal cramps. It was feared that she would lose her baby. A single injection of ACTH relieved her pain, reduced the swelling and she was able to return home in a few hours, and remained in good health.

The experience, Dr. Cluxton said, suggested to various Savannah physicians that the hormone might also be valuable in treating snakebite, a fairly common accident in that area, and it was decided to try it on the next case reported.

Not long afterward another woman stepped on a copperhead snake in her garden in the Savannah area and was bitten on the ankle.

The victim arrived two hours later at a Savannah hospital, where ACTH was given. The leg was swelling rapidly and was extremely painful, but the hormone stopped the pain and produced complete recovery in a few hours.

Science News Letter, December 16, 1950

MEDICINE

Polio Risk Increased After Tonsil Removal

➤ A CHILD'S risk of getting polio during an epidemic is three times greater if he has just had his tonsils removed. The risk of his getting the severe bulbar form of the disease is 11 times greater.

These figures, bearing out the suspicions of some but not all physicians, are reported by Dr. Gaylord W. Anderson, director of the University of Minnesota's School of Public Health.

Details of the statistical study, made with the assistance of Genevieve Anderson, Audrey E. Skaar and Franziska Sandler, and supported by the National Foundation for Infantile Paralysis, are reported in the ANNALS OF OTOLOGY, RHINOLOGY AND LARYNGOLOGY (September).

Science News Letter, December 16, 1950

MEDICINE

Doubtful That Fatness Leads to Heart Disease

➤ DEFINITE evidence that overweight causes heart disease or is responsible for its earlier development is lacking, Dr. Samuel Proger of Tufts College Medical School, Boston, declared at a meeting of the American Medical Association in Cleveland.

The theory of a connection between the two is, he stated, "based upon nothing more substantial than inferences only lightly touched by logic and impressions too frail to survive critical analysis."

While there may be doubt about fatness leading to heart trouble, there is not much doubt, he said, that overweight is harmful in persons who already have high blood pressure or heart disease.

The excess weight in such cases, he pointed out, is an added physical burden.

Science News Letter, December 16, 1950

GIANT "GEMS"—This interior view of a glass furnace looks like a mine in which huge "gems" are being cut. Actually the worker is breaking away the solidified glass to permit maintenance work on the furnace walls, a task which must be done every 30 months.

PLANT PATHOLOGY

Oak Wilt Preventive

Local spread can be stopped by cutting out infected tree, by poisoning ring of healthy trees around infected stand or by cutting interlocking roots.

➤ FOREST scientists have announced that oak wilt, rapid-spreading killer of one of America's most common trees, can be stopped in its tracks by poison or the knife.

Cutting out the first infected tree from a stand of oaks, like removing a cancer from the human body, will prevent local spread of the deadly disease, three University of Wisconsin plant pathologists said. Up to now neither prevention nor cure has been known for the blight, caused by a fungus called *Chalara quercina*.

Still a mystery, however, is the way in which oak wilt jumps great distances. Appearing little more than ten years ago in the Great Lakes area, it has already struck across Illinois, Wisconsin, Minnesota, Iowa, Missouri and Indiana. It was reported for the first time this year in Arkansas, Ohio and central Pennsylvania. Huge areas wooded in oak are threatened.

In a given stand of trees, oak wilt has been found to travel an underground route, moving from tree to tree through natural grafts of their roots. Cut these links, Drs. A. J. Riker, J. E. Kuntz and C. M. Beckman of Wisconsin told the American Phytopathological Society, and no further infection occurs in that area.

This is done by natural barriers such as roads. It may also be done, the Wisconsin scientists learned, by poisoning a ring of healthy trees around an infected stand or by cutting the interlocking root systems with a tractor-drawn knife. Sometimes if a single wilting tree is poisoned or cut out early enough, spread of the fungus can be stopped.

Proof of the underground root path was obtained by tracing poisons, dyes and radioactive iodine. When a single tree was poisoned with sodium arsenite, five trees were killed. When these in turn were treated, 21 more trees died. Radioiodine moved from a treated tree to three others within six hours, the Wisconsin pathologists reported.

Science News Letter, December 16, 1950

PUBLIC HEALTH

Tighter Controls Sought

Government is seeking more power to protect the public against poisoned food now that more synthetic chemicals are used in farming and food processing.

➤ THE GOVERNMENT is making a determined bid for more power to protect the public against poisoned food.

More and more are man-made chemicals being used in farming and food processing to fight insects, plant diseases, and weeds, to fertilize, or to enhance the attractiveness and nutritional value of grocers' wares.

The Food and Drug Administration now is asking Congress for tighter controls over which chemicals can or cannot be used. Under present laws, FDA says, dangerous chemicals can creep in. Yet only when some one gets hurt can the government act.

Pure food men have asked a special House committee to recommend changes in the laws which would make food processors show in advance that their products are harmless, just as drug manufacturers are now required to do.

The committe is headed by Rep. James J. Delaney, D., of New York. Hearings were begun last August and resumed recently in Washington as the committee delved into the use of chemicals in food products and farming.

Government experts and representatives of large food and chemical firms are being called to testify. Already they are arrayed on opposite sides of the fence.

The director of pharmacology of the Food and Drug Administration, Dr. Arnold J. Lehman, told the Delaney committee that his agency now has no jurisdiction to stop the widespread use of dangerous chemicals. One example, he said, is chlordane, a post-war insecticide which can be bought in common aerosol bombs at many drug stores. Yet chlordane, Dr. Lehman said, is four or five times more poisonous than DDT; it can harm the human liver and skin.

The chemical industry is opposing any change in food and drug legislation. Spokesmen say none is necessary, that adequate controls are provided by present laws.

They point to protracted hearings held by the Food and Drug Administration this year to determine permissible residues of various chemicals used by growers of fruits and vegetables. Much of the research evidence which filled 9,000 pages of testimony, the chemical industry claims, was the work of its own scientists, who themselves check possible toxic effect of farm chemicals on consumers.

The Delaney committee is investigating a much broader field than the FDA hearings covered, however. It is studying the use of all compounds used as insect killers or fertilizers in all types of farming, as well as chemicals used in the processing of food.

The public may hark back to the mid-1930's and say, "Isn't this where we came in?" For five years, from 1933 until 1938, the Food and Drug men and the chemical-makers battled out a new pure food act.

That law specifically prohibited traffic in food which may be injurious to health. But under it, deputy Food and Drug Commissioner C. W. Crawford told the Delaney committee, the standards of what is and what isn't harmful are too loose.

The government, he said, can act against impure food products only after they go on sale, a procedure he said was unsafe.

The Food, Drug and Cosmetic Act of 1938 was the first revision of the old Food and Drugs Act of 1906. Since that time, use of chemicals in agriculture particularly have increased tremendously. In the opinion of the men who protect the public's health and pocketbook, the time has again come when more effective safeguards against poisonous foods are necessary.

Science News Letter, December 16, 1950

BOTANY

Christmas Flowers Kept Fresh in Freezing Locker

➤ SCIENTISTS at Cornell University have discovered that cut flowers can be preserved in freezing lockers much the same as frozen vegetables.

The conventional cold storage of blooms in cans of water delays but does not stop the flower's development. A rose cut when the petals are beginning to unfurl goes right ahead and blooms.

To be held in their just-cut state, flowers have been put in "suspended animation" at Cornell. Blooms are cut at the usual stage for shipment. They are then wrapped and sealed in cellophane to stop dehydration, and stored in near-freezing temperatures. Blooms can be held as long as a month in this manner.

At Cornell, peonies, roses, chrysanthemums, garden lilies, lilies-of-the-valley, carnations and gladiolas have been stored successfully.

Only one flower resisted the modern treatment. Like their tropical neighbors the bananas, orchids should not be kept in the refrigerator.

Science News Letter, December 16, 1950

PHARMACY

Antibiotics Number 141

Seven basic mold remedies are now commercially available. Production of penicillin in January, 1950, had reached 16 trillion units per month.

➤ THE NUMBER of antibiotic, or so-called mold remedies, now totals 141 and runs from A almost to Z. A list of them, starting with actidione and ending with Xg, has been prepared by Dr. A. L. Baron of the research division of S. B. Penick Co., one of the group of firms that started penicillin production during the early days of World War II.

At that time, in 1942, there was not enough penicillin to treat a single patient. By January, 1950, production had reached the "enormous figure of 16 trillion units per month," states Dr. Henry Welch, chief of the antibiotics division of the U. S. Food and Drug Administration.

Of the 141 antibiotics listed by Dr. Baron, there are seven so-called basic ones that are commercially available. These are penicillin, streptomycin, chloramphenicol (also known as chloromycetin), aureomycin, bacitracin, tyrothricin, and terramycin. Besides the list of these basic seven, Walter J. Derenberg, Trade-Mark Counsel of the U. S. Patent Office, also gives a list of 80 antibiotic trademarks registered or about to be registered as of May, 1950.

Penicillin and other antibiotics are certified by the U. S. Food and Drug Administration. This means, Dr. Welch explains, that the FDA examines each batch of the drug produced for identity, strength, quality and purity before it is shipped in interstate commerce.

The 80 trade-marks listed by Mr. Derenberg cover either a single antibiotic produced by a manufacturer, as Ledercillin which is the Lederle Laboratories name for its penicillin for human use, or a preparation containing two drugs such as penicillin and ephedrine.

The information on trade-marks and certification are given in Dr. Baron's HANDBOOK OF ANTIBIOTICS (Reinhold). (Listed, SNL, Dec. 9.)

Science News Letter, December 16, 1950

ASTRONOMY

Big American Planetarium

Made from war surplus lenses, two-ton projector under construction in California will be quite similar to famous Zeiss instruments.

➤ A LARGE machine for projecting synthetic stars and planets is at last being made in the United States.

Out of war surplus lenses and a war-time optical shop sometime next year will come America's first two-ton planetarium projector.

The projector will be dumb-bell shaped and quite similar in design to the famous Zeiss projectors, made in Germany before the war and in use at a half-dozen or so planetaria throughout the country. Being built under the direction of Dr. G. Dallas Hanna, the new instrument will be housed in the Morrison Planetarium, in a wing of a building now being completed at the California Academy of Sciences in Golden Gate Park, San Francisco.

Only stars and planets visible to the unaided eye will be shown by the projector. The new machine, a compound projector, is made up of 32 smaller projectors that image the stars on the planetarium dome. Two other sets of projectors are used for showing the movements of the planets, moon, sun and the earth.

Star plates for the projectors, which can be likened to slides used in home projectors, will be made of glass covered with a thin coating of aluminum. Holes in the aluminum represent stars.

A few years ago, planetaria existed only in a half-dozen communities. Today the stars are regularly "put through their paces" several times each week at no less than 13 planetaria. Zeiss and Spitz projectors are used chiefly, while the Korkosz projector, an elaborate home-made device that projects the stars but not the planets, has been performing successfully for over a dozen years at the Seymour Planetarium in Springfield, Mass.

The Zeiss projector is by far the most effective device yet produced for picturing the motions of the heavens. With this instrument the clock of the heavens can be turned back a thousand years or more.

But the Zeiss works, a war-casualty, are no longer in existence. So today Americans are making simple and complicated planetarium projectors with great success. One is being made in California, another has reached the blue-print stage of development.

An inexpensive portable machine of great popularity today is the Spitz planetarium, used to bring stars into the classroom and even into the home. Attachments are available to show comets and meteors, eclipses of the sun and moon. Developed by Dr. Armand N. Spitz, lecturer at Fels Planetarium and educational director of the Franklin Institute, Philadelphia, this projector weighs only about 25 pounds and costs but a fraction of the price of a pre-war Zeiss.

Science News Letter, December 16, 1950

DAIRY SCIENCE

Buttermilk Used for Tastier Ice Cream

➤ MAYBE the pigs will not like this, but you will. Sweet cream buttermilk, dairy industry by-product that has gone to feed livestock in the past, can now be made into ice cream.

Buttermilk ice cream tastes like chocolate, vanilla, strawberry or any other flavored ice cream. It does not taste like buttermilk. Experts say it is creamier and more flavorful than ice cream made with skim milk.

Use of this material for ice cream is possible because of research by dairy scientists at the U. S. Department of Agriculture. They foud a way to make sweetened condensed buttermilk which keeps. Heretofore there have not been satisfactory methods for preserving sweet cream buttermilk so that it could be stored and shipped.

Science News Letter, December 16, 1950

SMOOTH—This creamy ice cream is made from sweet cream buttermilk that formerly went to feed the pigs. It is made possible by a new method for preserving buttermilk so that it can be stored and shipped.

CHEMISTRY

Plastics Are Now Three-Dimensional

➤ NEW three-dimensional plastics were exhibited in New York. There was a stitchless quilted plastic, suitable for crib or bar, and a film of uniform thickness, with printing, color and texture on both sides. These will be available for the first time early in the new year.

Smartly-styled place mats, handbags and belts of upstanding designs attracted much attention. Undercuts such as those found in beads were exhibited in vinylite plastic. Tough, durable and resistant to abrasion, the plastic felt like the leather, cord or woven straw it simulated. Practically wrinkle-proof, repeated folding or flexing did not crack or crease the articles.

New methods of printing, embossing and forming have made these possible, it was reported by George C. Miller, vice-president of the Bakelite Division of Union Carbide and Carbon Corporation, which makes the plastic.

This preview of new developments for applying surface treatments marks another milestone in the growth and expansion of the plastic film and sheeting industry. The exhibit demonstrates that almost any fabric, pattern or weave can be duplicated in plastic; it shows that film sheeting can be styled suitably and effectively for every room in the house.

Science News Letter, December 16, 1950

ENTOMOLOGY

Radioactive Flies Used in Oregon Tests

➤ "Hot houseflies" that cannot escape scientific detection are furnishing new clues to the habits of common disease-carrying summertime pests.

Flies used for tests this summer at Corvallis, Oreg., by scientists of the U. S. Agriculture Department and Oregon state laboratories had one unusual feature. They were radioactive.

By tagging thousands of guinea-pig insects with radioactive compounds from the atomic energy plant at Oak Ridge, Tenn., entomologists were able to trace how far and how fast the "hot" flies flew from a release point. This was the first such field test of its kind, the Agriculture Department's pest control researchers report.

Baited traps as far as 12 miles away picked up the contaminated flies. Checked by a counter device, they were readily identified.

Two ways were devised for getting the radioactive tracers into the bodies of flies and mosquitoes in the Corvallis laboratory. One was to raise insects in a medium containing a compound made with radioactive phosphorus. Even more effective was to feed the insects a sugar syrup containing radioactive phosphoric acid.

By learning that flies of a particular breed are apt to spread as much as 12 miles, the scientists added to knowledge of how insects with resistance to DDT sprays appear in an unsprayed area. In other spots where DDT has killed off non-resistant flies, tougher strains from a neighboring area are apt to move in, they found.

Information of this sort is also needed on the habits of mosquitoes. With it, insect fighters can more accurately set up control zones for poisoning or draining mosquito breeding areas.

Science News Letter, December 16, 1950

SEISMOLOGY

New Hebrides Area Site of Big Quake

➤ THE vicinity of the New Hebrides islands in the Pacific has been spotted as the location of a world-shaking earthquake of Saturday, Dec. 2, that gave a big jolt to seismographs. Records collected in part by SCIENCE SERVICE from American, Samoan and Japanese stations allowed the determination of location by U. S. Coast and Geodetic Survey experts. Rated 7.6 on the earthquake intensity scale upon which 8.5 is tops, the quake may have caused tidal waves that caused damage. (Time: 2:52:03 p.m. EST Dec. 2, location 16 ½ S 168 E., depth of focus 100 km.).

Science News Letter, December 16, 1950

ENGINEERING

Bottled Gas To Be Used To Power City Buses

➤ "BOTTLED" GAS of the kind used in pressure tanks for cooking in rural homes may soon be used instead of gasoline to power city buses, Dr. Leonard Raymond of Socony-Vacuum Oil Company recently stated.

Bus operators, he said, are showing an increasing interest in the use of liquid petroleum or bottled gas as a fuel because of the rising cost of operating buses. Another reason is the availability of engines with higher compression ratio and the ready supply of bottled gas.

The idea is not entirely new. Heavy trucks, off-the-road vehicles, rail cars and industrial engines have used this type of fuel on the Pacific coast since the early thirties. One bus line in Spokane has used the gas for ten years. About three per cent of the bottled gas sold in the country is for automotive purposes.

The gas used may be either propane or butane or a mixture of the two. The principal sources are crude oil wells, natural gas wells, gas distillate wells and refinery operations. Buses can be converted at a reasonable cost. The gases have high octane number and make knock-free operation at higher compression ratios possible, giving greater power output.

Science News Letter, December 16, 1950

IN SCIEN

PUBLIC HEALTH

Malaria Control Gives More Food to Pakistan

➤ BRING malaria under control in a subtropical farming area, and the direct result is an increase in crop yields and a drop in man hours of work needed to farm an acre of land.

This is the finding of a study made by the World Health Organization of the United Nations in Pakistan. With widespread DDT spraying, a WHO malaria control team has boosted agricultural output of Pakistan's East Bengal province 15% in two years.

Surveys were made recently of rice fields which had been sprayed and control fields which did not get the DDT treatment. Since weather and other conditions affected both areas equally, "the 15% increase of yield in the DDT-sprayed areas, and the decrease of man hours of labor required per acre of over 10%, can be fairly attributed to the malaria control work carried out," the team leader, Dr. G. Gramiccia, reported to WHO.

In the DDT-sprayed areas, in addition, no working hours were lost due to illness. In the unsprayed control areas, there was a 2.2% loss in man hours.

This year 193 square miles were sprayed. From the health standpoint, no malaria was found in babies up to a year old in either 1949 or 1950 in the sprayed areas. In the unsprayed region, there was an infection rate of 7.1% among children of that age.

Science News Letter, December 16, 1950

MEDICINE

High Blood Pressure Has 60 Causes

➤ DOCTORS know of some 60 causes for high blood pressure. If any one of these can be found when the patient is examined, he may be helped or possibly "cured," Dr. Irvine H. Page of Cleveland declared at the meeting of the American Medical Association in Cleveland, Ohio.

"Outlook in the field today is one of optimism," he said.

Restricted diets seem to help in 30% of carefully selected cases, he said A nerve cutting operation called sympathectomy helps many with early cases of severe high blood pressure.

Once the patient's particular type of high blood pressure has been classified, Dr. Page said, help can be given him whether through general measures or a special course of treatment.

Science News Letter, December 16, 1950

ENCE FIELDS

INVENTION

Eating Doll Bites Spoon and Swallows

➤ TO DOLLS that cry, talk, roll their eyes or walk, add an eating doll which can be fed with a spoon by its tiny "mother." It "bites" a spoon put into its mouth and "swallows" the contents.

This eating doll is one of the inventions on which the government issued a patent recently. Its inventor is Edgar Kahn of New York City. Patent number 2,531,912. Its head can be easily detached so that its "stomach" can be emptied before overfilled.

The lower jaw of this eating doll works on pivots. It has a magnet embedded in it, which is attracted to an iron spoon when inserted in the mouth. This jaw movement simulates swallowing action. A hanging tube within the body, attached to the rear of the mouth cavity, catches the "swallowed" food.

Science News Letter, December 16, 1950

RESOURCES

Mica Needed for Electronic Weapons

➤ IF ALL-OUT war comes, mica which the U. S. is now buying feverishly in far away India and Madagascar will be vitally needed for the electronic eyes, ears and nerves of battle.

But Uncle Sam is in a far better position in 1950, as regards this highly strategic material of war, than he was in 1940. Man-made mica, a scientific sleight-of-hand achieved since World War II, is now being made in substantial amounts in this country.

Mica is indispensable for modern electronic weapons. As an insulator, it keeps high-powered radio, radar, sonar, gun directors, calculators and all other types of electrical equipment from flashing out in one giant short circuit.

Fighting planes use mica-coated spark plugs. Mixed with new synthetic resins, mica insulates generators and protects vital delicate equipment from the weather.

Although the U. S. is the world's largest producer of natural mica, its output is limited in peacetime to powdered or scrap mica. For high grade, badly-needed "blocks" and "splittings" of mica used in electronics, this country has always had to go to India for its major supply. American firms could not compete with low-paid, highly-skilled India workers.

In World War II, substitutes were found for mica in many of its uses. Brazil began turning out some high grade mica. So did Madagascar, Argentine and Canada. But the most far-reaching war-born development was Germany's success in making synthetic mica.

U. S. scientists, searching for years for this secret, quickly adopted the results of German research. A government-sponsored program began in 1946 at the Colorado School of Mines. Later the U. S. Bureau of Mines began work on a synthetic mica pilot plant at Norris, Tenn.

Only this year did some of the results begin to be revealed. In Colorado, cakes of mica weighing up to 500 pounds were being made by a new "cool hearth" process. Synthetic crystals superior to natural mica in resisting breakdown at high temperatures were being "grown" in mica furnaces which traveled at snail-pace under gas flame jets.

In New York State, other researchers came up with "integrated mica," huge sheets of natural mica made entirely from scrap.

Scientists were already talking of "American self-sufficiency in mica." This is not quite the case—yet. For the tremendous amounts of mica needed in an all-out mobilization and war effort, the pilot plants which now exist would not be sufficient.

But new plants could and would be given top priority. World War III would have no mica bottleneck.

Science News Letter, December 16, 1950

ENGINEERING

Instrument Speeds Alloy Analysis

➤ DIRECT reading of the amount of different metals in an alloy will be possible using an instrument now in the final stages of development in Paris.

An improvement over present methods that require photographing, developing and then measuring, the apparatus was built by the Compagnie Radio-Cinema. It uses only two photoelectric cells to study the spectrum lines of the metals making up an alloy. American models use as many photoelectric cells as there are lines to study.

In the new model, one standard cell is stationary. The other cell, driven along the spectrum by a motor, is used to scan the spectrum of the alloy and can be stopped on any line selected for analysis. The result can be read directly by eye and is also recorded on a rotating chart at the rate of one analysis per minute.

Not only can the whole spectrum of an alloy or metal be scanned, explains Frederic D. Mathieu, director and chief engineer of the Compagnie Radio-Cinema, but also the light between the spectrum lines of elements can be measured and studied. This will be valuable for future research on alloy components. Further, the variations of the ratio of intensities of two lines can be recorded over any length of time and sparking.

Science News Letter, December 16, 1950

VETERINARY MEDICINE

Steel Splints on Legs Save Valuable Animals

➤ UNTIL recently most fractures in cows and horses have been considered incurable and the animals have been destroyed without further treatment.

But now broken legs in large animals may sometimes be repaired by a new technique adapted to this use by Dr. John W. Kendrick of the Veterinary Science Clinic at the University of California College of Agriculture.

"The new technique, which has been used on both dairy cattle and horses, has given satisfactory results in a high percentage of cases," he added.

Stainless steel splints are attached directly to the bone and the fractured part is encased in a plaster of Paris cast.

Such a fracture was repaired by this method in one dairy cow weighing 1,200 pounds. She calved about three months later, according to the Davis veterinarian, and by the fourth month was back in the milking string with no loss of production.

A horse whose leg was fractured in the early winter was back on the track the following year and won several races.

Science News Letter, December 16, 1950

RESOURCES

Feudalism Hampers Food Production

➤ DIRECTOR-General Norris E. Dodd of the United Nation's Food and Agriculture Organization opened an inter-American food conference in Montevideo, Uruguay, with a blast at feudalism in the Western Hemisphere.

In the countries of Latin America, he told delegates from 25 nations, "the system of landholding and tenancy is often such as to make increased production on the part of farmers almost impossible."

Mr. Dodd said much of the discontent, revolt and revolution in the world is caused by agricultural "barriers to progress." These he listed as:

A whole family works only a tiny bit of land which it does not even own. It pays an exorbitant share of the produce to a remote landlord. Too often it is weighed down under heavy taxes or usurious interest rates for a little necessary credit.

"Such conditions," said Mr. Dodd, "must be changed if modern technology is to be given a chance to transform the lives of average human beings."

A regional FAO conference will go on for the next three weeks simultaneously with the Fourth Inter-American Conference on Agriculture called by the Organization of American States. Both Mr. Dodd and U. S. Secretary of Agriculture Charles Brannan are in Montevideo for the conferences.

Science News Letter, December 16, 1950

METEOROLOGY

Humidity and Weather

Cardboard Santa Claus Weatherman is simple weather instrument that you can make yourself. He lowers hand when weather is wet, raises it on dry days.

By MARTHA G. MORROW

➤ WE ALL talk about the humidity. We complain when the air is hot and humid; we rejoice when it is cold and dry.

Before leaving home in the morning, many of us take a careful look outside to see if clouds indicate rain sometime during the day.

Others check the weather forecast in the paper or over the radio before deciding whether to carry an umbrella or bother with a raincoat.

Although much detailed information must be collected throughout the country before weather experts can accurately foretell when it will rain or fog will form, a few simple gadgets can be kept around the house to indicate at a glance whether the air is dry or moist.

These home humidity indicators do not show what the weather will be like tomorrow or even later in the day, but just what it is like now. By checking them frequently, you can discover whether the air is becoming drier or more humid, and thus get a clue to the future.

Human hair is extremely sensitive to changes in humidity, altering its length to correspond with such changes. The change in length becomes pronounced when the hair's natural oils and fats are removed.

Natural blond hair that is not artificially waved and has never been dyed shows the greatest uniformity of change. A change of relative humidity from 0% to 100% causes chemically cleaned human hair to extend from 1.5% to 2.5% beyond its original length.

Use Human Hair

You can make a simple humidity indicator from a long strand of blond hair, an eyelet and pin that slips into it nicely, and two pieces of fairly stiff cardboard. A pair of scissors and a little glue are your tools.

The hair is the most important item, so make certain it is naturally blond and has never been given a permanent wave. The next time your long-haired friend has just shampooed her hair, ask permission to cut off several strands—this will save cleaning it. Get as long strands as possible and soak them for about two hours in carbon tetrachloride, then rinse in distilled water such as that used in an automobile battery, or use filtered rainwater.

To be sure the hair stays straight, dry under light tension. Paper clips are about the right weight, so attach one to each end of the hair, being careful to touch the hair only at the ends as you work. String the hair across two well-dusted books standing upright. When dry, fold the strands in a clean piece of paper and put aside until needed.

Make Santa

Since Christmas is almost here, it would be appropriate to give your indicator a holiday motif, so make a Santa Claus—his arm will be your humidity indicator—and an evergreen tree as the background.

First sketch on cardboard a Christmas tree about ten inches high. Use a green crayon freely and paste on a few ornaments for gayety. Draw the back of a jolly Santa Claus (minus his right arm) about eight inches high, put a few toys at his feet, and color him red. Cut out in one piece.

Elsewhere on the cardboard draw Santa's outstretched arm and mark an "X" on both the arm and shoulder where the two should be pinned together. Extend the arm beyond the shoulder a bit to give the proper counter-balance so that the arm will not be too heavy. Color and cut it out.

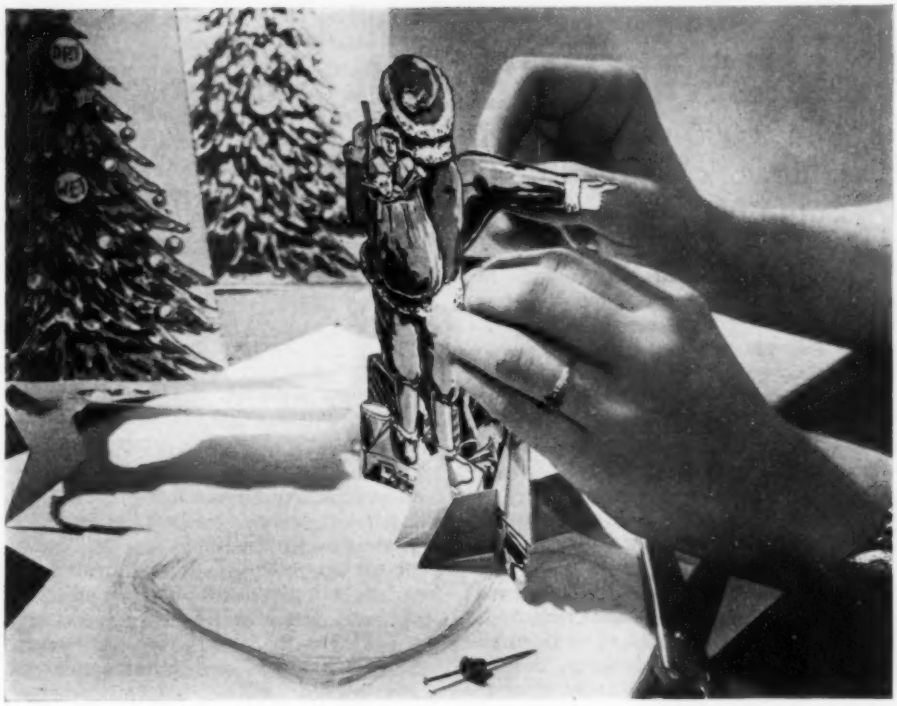
Use Pin

Stick a pin into the arm at "X" and work it around until the hole is just large enough for a tiny eyelet to slip into place. Run the pin through the eyelet, swing the arm around several times and notice the position of the arm when it comes to rest. It should point a bit downward. It it points upward, cut off a bit of the counterbalance; if it points straight down, add a bit.

Prop the Christmas tree from the rear so it will stand by itself. Cut out two cardboard strips to hold Santa and the tree together, making two thin slots about a half inch apart in each base, in the tree and in the toys at Santa's feet. Fit Santa into the base so he will stand up.

Now work with the hair. Grease and perspiration from your fingers, even though you may have just washed them, will keep the hair from reacting effectively, so hold the hair only at the ends. Remove the eyelet from the arm, and from the uncolored side thread a single hair through the hole in the cardboard, letting about half an inch of hair come through.

AGAINST DAMPNESS—Moisture-indicating pellets are used in caps for up-to-the-minute salt shakers and cookie jars. Granules which change color with humidity are sealed in moisture-proof containers for machine parts and scientific instruments.



PUTTING SANTA TOGETHER—Notice particularly Santa's arm properly counterbalanced. The pin is run through Santa's shoulder, then through the eyelet which acts as a bearing to help the arm swing freely.

Push the small end of the eyelet into the hole from the side you colored. Wind the hair under the head of the eyelet and push firmly into place. Glue the cardboard and eyelet together by placing a speck of glue behind the eyelet head. Let dry thoroughly.

Stick the pin into Santa's shoulder, then through the eyelet. Hold the hair by its loose end, tug a bit to be sure it is anchored securely, and wind twice around the part of the eyelet extending from the back of Santa's arm, winding clockwise (the way the hands of your clock turn). Bring the hair down to the base and anchor firmly by slipping it into a tiny slit cut in the cardboard base beneath the arm; pull the hair just enough for the arm to extend straight out from the body.

Slip the Christmas tree into place behind Santa Claus. Push the pin from Santa's shoulder and arm into the cardboard at one side of the tree. Check the hair and arm arrangement. The hair should touch nothing from the place where it leaves the eyelet until it fits into the slot at the base: be sure it is not wrapped around the pin. Slip the eyelet along the pin until the arm hangs free and about an equal distance from Santa and the tree.

Now Test

Now test your hair indicator. Place it on a shelf, windowsill or some other safe place in the bathroom, close the window and door firmly, and run piping hot water into the tub or shower. The cut-out was designed so that as the humidity increases and the hair from the eyelet to the base becomes longer, the pointing arm would swing down. Mark on the tree the place where the hand points for 100% humidity such as you have when the mirror becomes fogged. The next time the air is extremely dry, mark the place on the tree to which the hand points, and your indicator is complete.

Change Color

Humidity may not only be indicated by a physical change such as elongation of a strand of hair, but also by a chemical change like a difference in color. Cobalt chloride, sometimes used as "magic ink," changes from a deep blue to pale pink as it becomes more moist. A dark blue when dry, it becomes a light blue at 20% relative humidity, lavender at about 30% and pink at 40%.

Silica gel and alumina, both of which readily pick up moisture from the air and cling to it until the moisture is driven out by heat, are used as carriers for the tell-tale cobalt chloride. When so much moisture has been absorbed that they appear quite pale, the granules or pellets are placed in a warm oven and the moisture driven off until they are once again quite blue.

Salt-shaker caps containing pellets of alumina impregnated with cobalt chloride will be a favorite Christmas item this year in some areas. Salt will pour freely until the pellets turn pink; dried out in the oven the protective pellets are ready to go to work again. Likewise up-to-the-minute cookie jars have caps containing pellets that catch the moisture and signal when they need to be dried out.

Silica gel impregnated with cobalt chloride is helping our troops overseas. Sealed in moisture-vapor-proof containers for machine parts and scientific instruments, they make sure the contents reach our soldiers and sailors factory fresh, free from rust and corrosion, mildew and mold. These same granules played a large part in preserving our "mothball fleet" so it would be ready for service when needed. Since rust and corrosion do not occur in atmosphere containing less than 30% relative humidity, the tell-tale color indicates a dangerous leak or tear in the transparent packaging or wrapper.

Santa Claus, with a properly counterbalanced arm, has been worked out for you by Science Service. For the nominal fee of 50 cents you will receive the two drawings on cardboard, processed human hair, pin and eyelet needed to make your own humidity indicator, as well as some granules that change color with moisture. Just write Science News Letter, 1719 N St., N.W., Washington 6, D. C., and ask for the kit on Humidity.

Science News Letter, December 16, 1950

PALEONTOLOGY

Fossils of Wyoming Like South American Fish

➤ IN DIM ages 55,000,000 years ago, when vast areas of North America were lakes, the western plains were the homes of fish now found only in the Southern Hemisphere, Smithsonian Institution scientists report.

"Important discoveries" of ancient fish fossils were made this summer at the Green River formation near Fossil, Wyo., by Dr. David H. Dunkle of the Smithsonian and Dr. Bobb Schaeffer of the American Museum of Natural History.

The paleontologists found fossils of fish very similar to those caught in the Great Lakes today. Other specimens, however, showed that the lakes which covered parts of what are now Wyoming, Colorado and Utah were once quite warm.

"There is no reason to believe," Dr. Dunkle said, "that the climate differed materially from that found in the region today. During so long a period as 6,000,000 years (while the lakes existed), there naturally would be many fluctuations in climate with extended periods when the water would be fairly warm."

The prehistoric lakes, probably two in Wyoming and one covering western Colorado and northeastern Utah, were surrounded by volcanic mountain ranges. Eruptions showered volcano ash into the lakes, killing fish in great numbers. The fish settled into the mud, sand and ash of the lake bottoms and their remains were pressed into shale and sandstone fossils.

Science News Letter, December 16, 1950

ARCHAEOLOGY

Oldest Houses Unearthed

Pinto houses, built more than 3,000 years ago of wooden posts interlaced with wattlework of reeds and twigs unearthed near Little Lake, California.

➤ UNEARTHING of three of America's oldest houses—probably constructed more than 3,000 years ago—has been reported at the foot of the Sierra Nevada, 60 miles north of the town of Mojave, Calif.

Dr. George W. Brainerd, associate professor of anthropology at the University of California at Los Angeles, finds the houses are undoubtedly among the oldest known in the New World.

Working in the Stahl site near Little Lake, California, with his associate M. R. Harrington, research associate at U.C.L.A. and curator of the Southwest Museum in Los Angeles, Dr. Brainerd has stated that the area is one of the richest archaeological sites in southern California.

The ancient houses are constructed of wooden posts driven into the ground and interlaced with a wattlework of reeds, twigs, etc., possibly plastered with mud for weather-proofing. Its roof probably corresponded with other flat roofs in western North America.

Architects of the period apparently stuck to no general style. Each of the three houses varies slightly in shape, two being rectangular while the third is round. Traditionally, the skin-covered doorways opened to the east.

Indians living in these houses were of the Pinto Culture, which thrived prior to 1,000 B.C.

Many of their implements have been found in the diggings, including well-shaped obsidian spearheads (they had no bows and arrows), knives, grinding stones, skinning and scraping tools and partially fossilized animal bones—such as native American camels and horses, now extinct.

Science News Letter, December 16, 1950

CHEMISTRY

Synthetics Satisfactory

Substantial savings in production costs and improved operation of machines possible through use of synthetic lubricants instead of petroleum products.

➤ SYNTHETIC lubricants, instead of petroleum products, have been found satisfactory in certain industrial applications, and their use is recommended because of superior qualities and the saving of petroleum for other purposes.

Substantial savings in production costs and improved operation of mechanical equipment are possible through the substitution of synthetic lubricants for petroleum products in certain industrial applications, the American Society of Mechanical Engineers was told.

C. H. Sweatt and T. W. Langer, Union Carbide and Carbon Corporation, presented a paper stating that these synthetics are particularly valuable where unusual and severe operating conditions are present. In addition to use as lubricants in the ceramic, dairy, metal working and rubber industries, they are finding applications as antifoaming agents, in nylon, glass, wool and rayon fibers, and as a substitute for oil in printing inks.

The polyalkylene glycols and their derivatives constitute one class of synthetics differing considerably from petroleum products in physical and chemical properties, they said. These lubricants range in consistency from very light to highly viscous liquids. Some are water soluble while others are not.

Properties of these lubricants include excellent anti-wear action, good load-carrying capacity, favorable viscosity-temperature relationships, low stable pour points, little or no solvent and swelling effect on either natural or synthetic rubber, and stability at elevated temperatures.

Science News Letter, December 16, 1950

ASTRONOMY

No New Stars in Small Magellanic Cloud

➤ NO NEW stars will be born in the small Magellanic cloud, Dr. Harlow Shapley, director of Harvard College Observatory, predicts.

The large Magellanic cloud, however, will continue to give birth to stars.

These Magellanic clouds of hundreds of thousands of stars look to the naked eye like detached portions of the Milky Way. They are so far south they are never seen from the United States.

Recent theories of star origin make cosmic dust the building-material for supergiant stars such as commonly are found in the large cloud. In its central regions the Greater Magellanic Cloud is so rich in the pre-star stuff that the light of more distant objects is scattered and absorbed to the extent of one magnitude or more.

But the small cloud is almost completely free of interstellar dust and gas. Here the epoch of star birth has passed, Dr. Shapley stated at the meeting of the Harvard Observatory's Visiting Committee. This report marks the completion of the first quantitative measure of a galaxy's content of dust and gas from which its future stars may be born.

The large angular diameters of these two Magellanic clouds, nearest of external galaxies, made it possible for Dr. Shapley and his associates to complete a survey in and around the clouds. The frequency of the more distant galaxies was found, and from their numbers the transparencies and the amount of light-scattering material calculated.

Between galaxies, space is essentially clear of absorbing material, but in our own Milky Way galaxy there is much of this star-stuff. Its study is one of the main topics of modern astronomical research.

The so-called Great Rift in the Milky Way is caused by such material, which is so heavy near the Milky Way plane that it blocks our view of remote parts of our own galaxy. Of the billions of outside galaxies, only the two Magellanic clouds of the southern sky cover large enough areas of the sky to use these statistical methods of "translucent" galaxies employed by the Harvard astronomers.

Around the large cloud, for example, down to magnitude 17.5, about 30 galaxies are found in each square degree, indicating complete transparency. But in the axis of the cloud and in its central "deserts," only three or four galaxies per square degree are able to shine through.

Science News Letter, December 16, 1950

MEDICINE

Surgery Is Only Cure For Lung Cancer

➤ "THE ONLY possible chance of cure" of lung cancer is by surgical removal of all or part of the lung, Dr. Brian Blades, chief of surgery of George Washington University Hospital, Washington, D. C., declared at the meeting of the American Medical Association in Cleveland, Ohio.

Of all deep cancers in the body, the possibility for surgical cure is probably best in the case of lung cancer, he said. Lung cancer is one of the commonest forms of cancer and apparently is increasing.

Science News Letter, December 16, 1950

ENGINEERING

Magnetic Fluid Brakes

Principle developed for automobile clutches has been applied to new type of brakes operated by a push-button attached to steering gear.

➤ THE THUMB, not the foot, may operate the automobile brakes of the future. The magnetic fluid principle developed at the National Bureau of Standards for automobile clutches has been put to work at Rensselaer Polytechnic Institute in Troy, N. Y., in a braking device operated by the flow of an electric current.

The magnetic fluid developed by Jacob Rabinow some three years ago at the National Bureau of Standards uses an oil containing iron dust. When a magnetic field is applied to the mixture, the iron particles are magnetized. They then tend to stretch out lengthwise between the plates of the electromagnetic field and solidify the mixture.

Since the discovery of the magnetic fluid, several important uses for it have been developed. Among them is in so-called servomechanisms, automatic devices for control purposes, including in airplanes. Other uses are in shock absorbers and recoil mechanisms.

In the Rensselaer automobile brakes, a very light oil saturated with iron dust of a smooth grain type is used. It forms a liquid ribbon only one twenty-fifth of an inch thick between the brake rotor and the outside drum in which a magnetic coil is embedded. Current to activate the coil is controlled by a push button on the steering wheel. The brake takes hold smoothly and its power increases as the magnetizing current is stepped up.

Science News Letter, December 16, 1950

PLANT PATHOLOGY

Excess Acids Weaken

Amino acids linked to proteins in all living organisms, when they exist in excess in fungus-susceptible plants, have weakening effect.

➤ A CLUE has been uncovered to one of the unknown factors which make some plants more resistant to deadly fungus diseases than others.

With his study of black-rot diseases of tobacco, Dr. Robert A. Steinberg of the Department of Agriculture's plant research station believes that a poisoning process may be one key to this major biological mystery.

Certain amino acids, the physiologist found, seem to pave the way for the destroying fungus. Amino acids are vital substances linked to proteins in all living organisms. They play an important part in human nutrition, with more than 20 of them now known to science.

When some of these acids exist in excess in plants, Dr. Steinberg learned, they have a weakening effect on disease-susceptible plants, more so than on resistant varieties. One acid in particular is deadly. It was found to be lethal to tobacco seedlings at strengths as low as five parts per million.

In testing various of the amino acids with no disease organisms present, Dr. Steinberg discovered that they hit hardest at young tobacco plants which were known to be susceptible to black rot. Hardier strains of tobacco were affected least by the acids.

If it can now be shown that the fungus which causes a disease produces an excess of toxic acids in the plant system, a long step will have been taken toward better understanding of these diseases.

Sometimes completely ruining a farmer's crops in a short time, the fungus diseases can be fought by chemicals. But the only permanent defense is the work of plant breeders who cross and recross strains to produce plants with built-in resistance against disease.

Science News Letter, December 16, 1950

AERONAUTICS

Balsa Wood Dust Shows Air-Flow Pattern

See Front Cover

➤ FINE DUST from the lightweight wood known as balsa is being used in laboratories of the National Advisory Committee for Aeronautics to make movements of air visible in investigations concerning air-flow.

Its first use was in studying helicopters. The trend toward increasing the size and load capacity of helicopters has resulted in increased use of multiple-rotors. In order to study air patterns resulting from such rotors, this so-called NACA balsa-dust technique was developed.

The method, according to a recent report by the NACA, has provided a simple means of observing the flow distribution through model rotors and is suited for many other applications in which a pictorial representation of the air-flow pattern in a given plane is desired.

With this material still photographs and motion pictures of air-flow can be taken. One is shown on the cover of this week's SCIENCE NEWS LETTER. Other materials, including smoke, were tried. The finely divided balsa particles were found to provide the best combination of high reflectivity and low mass of any of the materials investigated.

The report, NACA Technical Note 2220, was prepared by Marion K. Taylor, Langley Aeronautical Laboratory, Langley Field, Va., where the method was developed. The balsa-dust method of air-flow visualization is simple to use, the report states, and requires only a supply of balsa wood, a camera and photograhpic lights.

Science News Letter, December 16, 1950

About 40% of the land area of the United States receives too little *rainfall* for safe general agriculture.

• Books of the Week •

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

BEES: Their Vision, Chemical Senses and Language—Karl von Frisch—*Cornell*, 119 p., illus., $3.00. The text of three lectures given at Cornell University, the American Museum of Natural History and the University of Minnesota by the author during the spring of 1949. (See SNL, December 9, p. 376).

CHEMICAL THERMODYNAMICS: Basic Theory and Methods—Irving M. Klotz—*Prentice-Hall*, 369 p., illus., $6.00. A college text designed primarily for chemists.

COLOR ATLAS OF PATHOLOGY (Hematopoietic System, Reticulo-Endothelial System, Respiratory Tract, Cardiovascular System, Liver Alimentary Tract, Kidney and Urinary Tract and Musculoskeletal System)—U. S. Naval Medical School—*Lippincott*, 546 p., illus., $20.00. A reference work with reproductions in full color for the student, the clinician and all those connected with the medical profession.

CRIME CAUSATION: Selected Bibliography of Studies in the United States 1939-1949—Otto Pollak, Compiler—*University of Pennsylvania Press*, 53 p., paper, $1.50.

DIFFERENTIAL DIAGNOSIS OF INTERNAL DISEASES: Clinical Analysis and Synthesis of Symptoms and Signs—Julius Bauer—*Grune and Stratton*, 866 p., illus., $12.00. A text for an advanced course in diagnosis.

DISEASES OF CEREALS AND GRASSES IN NORTH AMERICA (Fungi, Except Smuts and Rusts)—Roderick Sprague—*Ronald*, 538 p., illus., $7.00. A monograph concerning the fungi occurring on members of the grass family.

FOR THE DEAN: Essays in Anthropology in Honor of Byron Cummings on His Eighty-Ninth Birthday, September 20, 1950—Erik K. Reed and Dale S. King, Eds.—*Hohokam Museums Association* and *Southwestern Monuments Association*, 318 p., illus., $6.00. Former students of Dr. Cummings combined to write a volume on Southwestern anthropology.

THE FRESH-WATER ALGAE OF THE UNITED STATES—Gilbert M. Smith—*McGraw-Hill*, 2nd ed., 719 p., illus., $10.00. A reference book brought up-to-date. Many genera and species have been added to this edition.

FREUD OR JUNG—Edward Glover—*Norton*, 207 p., $3.50. A Freudian compares the theories of Freud and Jung.

HIGHWAY RESEARCH BOARD: Proceedings of the Twenty-Ninth Annual Meeting—Roy W. Crum, Fred Burggraf and W. N. Carey, Jr., Eds.—*Highway Research Board*, 620 p., illus., $7.50. Includes the papers given at the annual meeting in Washington, D. C., Dec. 13-16, 1949.

THE INITIATIVE AND REFERENDUM IN OREGON: 1938-1948—Joseph G. LaPalombara—*Oregon State College Press*, 137 p., illus., paper, $1.00. A monograph on some policy-making processes.

KOREA: An Annotated Bibliography of Publications in Western Languages—Helen Dudenbostel Jones and Robin L. Winkler, Compilers—*Library of Congress*, 155 p., paper, $1.10. Includes about 750 publications in all fields with emphasis on works published since 1930.

THE MARINE ANNELIDS OF OREGON—Olga Hartman and Donald J. Reish—*Oregon State College Press*, 64 p., illus., 75 cents. A monograph on the distribution of this particular phylum of worms.

MEET THE SCIENCES 1900-1950: A Half Century of Good Science Reading—Science Committee, New Jersey Library Association—*New Jersey Library Assn.*, 3rd ed., 6 p., paper, 10 cents. Provides the general reader with an over-all selective guide to the background works on science.

MUNICIPAL AFFAIRS—Ernest W. Steel—*International Textbook Company*, 2nd ed., 377 p., illus., $5.50. A new edition of a book combining city government fundamentals with the treatment of city administration.

THE NEW YOU AND HEREDITY—Amram Scheinfeld—*Lippincott*, 616 p., illus., $5.00. Some of the latest findings regarding human inheritance are presented. This book follows YOU AND HEREDITY written by the same author ten years ago.

THE 1950 YEAR BOOK OF OBSTETRICS AND GYNECOLOGY (August, 1949—July, 1950)—J. P. Greenhill, ed.—*Year Book Publishers*, 570 p., illus., $5.00. Presents advances made in obstetrics and gynecology during the past year.

OPERATIONAL CALCULUS: Based on the Two-Sided Laplace Integral—Balth. Van der Pol and H. Bremmer—*Cambridge University Press*, 415 p., illus., $10.00. An advanced mathematics text of British origin.

PHYSICAL EDUCATION IN THE SCHOOL CHILD'S DAY—Simon A. McNeely and Elsa Schneider—*Gov't. Printing Office*, Federal Security Agency Bull. 1950, No. 14, 94 p., illus., paper, 30 cents.

POPULATION GENETICS AND ANIMAL IMPROVEMENT: As Illustrated by the Inheritance of Egg Production—I. Michael Lerner—*Cambridge University Press*, 342 p., illus., $5.50. A mathematical presentation. Of British origin.

PRACTICAL NURSING CURRICULUM: Suggestions for Developing A Program of Instruction Based Upon the Analysis of the Practical Nurse Occupation—Arthur B. Wrigley, Director of the Study—*Gov't. Printing Office*, Federal Security Agency Misc. No. 11, 140 p., illus., paper, 65 cents.

PROBLEMS OF CYTOLOGY AND EVOLUTION IN THE PTERIDOPHYTA—I. Manton—*Cambridge University Press*, 316 p., illus., $8.50. An advanced college text on ferns. Of British origin.

PROGRESS IN GYNECOLOGY, Vol. II—Joe V. Meigs and Somers H. Sturgis, Eds.—*Grune and Stratton*, 821 p., illus., $9.50. Some of the latest advances in the field of gynecology are described.

REPORT OF THE COMMITTEE ON THE MEASUREMENT OF GEOLOGIC TIME 1949-1950—John Putnam Marble, Chairman—*National Research Council*, 118 p., paper, $1.00. Presents an analysis of the methods for absolute measurement of geologic time and allied subjects received by the committee during the last year.

SELECTED PROCEDURES IN TEACHING BIOLOGY—E. Irene Hollenbeck and Elmo Nall Stevenson—*Oregon State College Press*, 57 p., paper, 75 cents.

SKULL FRACTURES AND BRAIN INJURIES—Harry E. Mock—*Williams and Wilkins*, 806 p., illus., $13.50. A general surgeon presents his personalized, practical approach to this field of medicine.

SPECIES OF SELENOPHOMA ON NORTH AMERICAN GRASSES—Roderick Sprague and A. G. Johnson—*Oregon State College Press*, 43 p., illus., paper, 75 cents.

THE STORY OF MOUNTAINS—Ferdinand C. Lane—*Doubleday,* 488 p., illus., $6.50. A description of the mountains in the world. Profusely illustrated with full paged black and white photographs.

STUDIES IN LOBOTOMY—Milton Greenblatt, Robert Arnot and Harry C. Solomon, Eds.—*Grune and Stratton,* 495 p., illus., $10.00. A monograph on an important brain operation.

UNITED STATES ATOMIC ENERGY COMMISSION RADIATION INSTRUMENT CATALOG—AEC Radiation Instruments Branch—*AEC Technical Information Service,* (Distributed by Office of Technical Services, U. S. Dept. of Commerce), Catalog No. 2, Parts 1 & 2, unpaged, illus., paper, $2.00 for both parts. A catalogue of commercially available radiation instruments.

THE URINARY FUNCTION OF THE KIDNEY—A. V. Wolf—*Grune and Stratton,* 363 p., illus., $7.50. A monograph discussing many of the latest developments in renal physiology and related fields.

VARIABILITY OF AGRONOMIC AND SEED COMPOSITIONAL CHARACTERS IN SOYBEANS AS INFLUENCED BY VARIETY AND TIME OF PLANTING—Martin G. Weiss and others—*Gov't. Printing Office,* U. S. Dept. of Ag. Tech. Bull. No. 1017, 39 p., illus., paper, 15 cents.

VERTICAL FARM DIVERSIFICATION—D. Howard Doane—*University of Oklahoma Press,* 183 p., illus., $2.75. Methods of grading, processing and direct selling are presented.

WHERE CHILDREN LIVE AFFECTS CURRICULUM—Effie G. Bathurst—*Gov't. Printing Office,* Federal Security Agency Bull. 1950, no. 7, 77 p., illus., paper, 25 cents. The author suggests curricular improvements for different parts of the country.

Science News Letter, December 16, 1950

PUBLIC HEALTH

Tattooing May Spread Virus of Jaundice

➤ WARNING to sailors and other servicemen: Think twice before getting tattooed. You may get a liver inflammation with jaundice from the tattooing.

Among 26 enlisted men in the hospital in Panama City with this jaundice, 18 had been tattooed in Panama City, 17 at the same place, and all of them within the time it takes jaundice to develop after virus gets into the body. The cases are reported by Dr. Ballard F. Smith, now at the Veterans Administration Hospital in Buffalo, N. Y., (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Dec. 2).

After seeing these cases, Dr. Smith investigated further and became convinced the jaundice virus was being spread with the tattoo needle and dye. All tattooing was ordered suspended in Panama City and Colon until the operators had been instructed in more hygienic methods. After that, two establishments on the Pacific side and one on the Atlantic side of the Canal Zone reopened and followed the approved procedure.

Science News Letter, December 16, 1950

BOTANY

NATURE RAMBLINGS

Christmas Trees

➤ THIS is the season when 28,000,000 little trees are brought into 28,000,000 unseasonably warm front parlors and loaded down with enough tinsel, twinkling balls and colored lights to build a glittering highway from earth to the moon.

The little evergreens never flowered when they grew out of doors. Suddenly they sprout bright candles or complete electric systems for blossoms. Apples, oranges and candy canes appear in their boughs in a burst of fruit. It takes real magic for such things to occur. But this is a time of benign magic.

Christmas trees, like many other things which decorate homes at Yuletide, are older than Christmas itself. They were first used in lands far from Bethlehem. They belong to the North, to dark and savage lands beyond the Rhine and the Danube.

The favorite Christmas tree in America is the spruce. There are several types of spruce, but they all can be spotted by their short, sharp, prickly needles, each one standing on a minature pedestal by itself. Their small cones hang downward.

Then there is the fir, close cousin of the spruce. Firs have softer needles, usually curved, and their cones stand straight up.

Pine trees, often used at Christmas, can be told from spruce or fir by the fact that their needles come in bunches or pairs instead of singly. White pines always have five needles in a bunch. The various yellow pines have less than five—usually two.

Red cedar has very fine, feathery branches of small pointed leaves. Arbor-vitae, a relative of the red cedar, has leaves flattened into tiny scales which completely cover the twigs on which they grow.

Gigantic is the merchandising machine which brings millions of these trees from mountain forests to city street corners, all within the brief month between Thanksgiving and Christmas Eve.

Yet only in rare instances does this mighty splurge of woodland cutting hurt the forest. If the Christmas tree marketeer cuts selectively, his thinning helps the remaining trees to grow, trees which might otherwise have died from crowding.

Many families do not buy a cut tree at all, but instead a small spruce or fir planted in a tub. They use this as a perennial Christmas tree, bringing it indoors each December, sinking the tub in the garden during the remainder of the year. Children and tree grow together, until one day the parlor ceiling is suddenly too low. The magic still lives, but the tub is outgrown.

Science News Letter, December 16, 1950

NUTRITION

Bottled Pancakes Soon From the Milkman

➤ FIVE new or newly-packaged dairy products may soon be delivered to your doorstep by the milkman, according to H. B. Hubbell of the dairy industry division of the University of California Agricultural Experiment Station.

Here's what you can look forward to:

1. Milk in any of several popular fruit flavors—raspberry, strawberry, cherry, and orange. And of course, there is always the old favorite, chocolate milk.

2. Half-and-half, a cereal cream that takes the place of the top milk that is disappearing with the rise in favor of the homogenized product.

3. A new bottled pancake mix, ready to pour on the skillet for breakfast hot cakes, containing fresh milk products. A similar waffle mix is also on the market. These are packaged in paper containers and may be ordered for delivery along with the morning milk, butter, and the various cottage cheeses.

4. Sour cream—also a popular dairy food. Its use is similar to that of mayonnaise. Seasoned, it makes an excellent dressing for fruit and vegetable salads.

5. Yogurt—while not new—is now packaged in half-pint containers. It is being widely used in reducing diets. Containing the milk-solids-not-fats, it has many uses indicated on the paper carton in which it comes.

Science News Letter, December 16, 1950

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 549. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

⚙ *DECORATION KIT* for glass, china and metal objects, contains six basic paint colors, two bottles of a thinner liquid, a paint brush and eight plain tumblers. Designs painted can be made permanent by baking in the oven.

Science News Letter, December 16, 1950

⚙ *CARBURETOR PREHEATER,* for quick-starting of automobile engines in cold weather, is a unit installed between carburetor and intake manifold. The unit contains a wire heated electrically from the battery. When gasoline hits the hot element it is instantly vaporized.

Science News Letter, December 16, 1950

⚙ *CHILI FLAVOR* for frankfurters, added in the manufacturing process, is a seasoning containing a number of spices in addition to those used in making former chili powder. "Hot dogs" containing it can be served without the customary outside sauces to give better taste.

Science News Letter, December 16, 1950

⚙ *VACUUM CLEANER,* for use in laundering rugs and upholstery at home, has an over-size motor that supplies high suction to pick up suds and water as well as dirt and lint. Its rubber-sealed metal reservoir is easily detached for convenient emptying.

Science News Letter, December 16, 1950

⚙ *CHRISTMAS KIT* for the youngster includes plastic blocks of various shapes, as shown in the picture, which can be fitted together to form many objects from a giraffe to a rocket gun. Rustproof fasteners are used to snap pieces together.

Science News Letter, December 16, 1950

⚙ *ADJUSTABLE DESK TRAY,* holding either letter or legal size papers, is made of light-weight long-wearing plastic in two parts connected by a metal center panel. The plastic parts can be slipped in and out of the metal panel, and are held in the desired position by metal tabs.

Science News Letter, December 16, 1950

⚙ *HAND BRUSH,* for clothing or upholstery, is made of wool fibers firmly bonded with rubber-like neoprene, and will pick up lint, face powder and other clinging substances usually hard to remove. It can be used also with cleaning fluids because of its neoprene bond.

Science News Letter, December 16, 1950

⚙ *SELF-LOCKING STAPLE* to hold wire fencing to a wooden post, recently patented, resembles the ordinary U-shaped staple but has outward projecting barbs near the pointed ends. These bite into the wood when an attempt is made to pull the staple out of the post.

Science News Letter, December 16, 1950

Do You Know?

Larvae of all mosquitoes develop in water.

Frozen *fish* keeps well if kept completely frozen.

Roughly, there are 1,000 kinds of *trees* in America.

A promising cure for *rattlesnake bites,* still in experimental state, is a serum from king snakes.

Canned *watermelon juice* is promised for the near future.

A male *hippopotamus* at the Philadelphia zoo, a youngster in 1936, now weighs about three tons.

Titanium was discovered by an English clergyman in 1791 and named by a German scientist some years later.

The *soil* in pots of houseplants will be sufficiently aerated if watered thoroughly and then permitted to dry out.